

REMARKS

Claims 1-31 are pending. Claims 1-31 have been amended. No new matter has been introduced. Reexamination and reconsideration of the present application based on the following amendment and remarks are respectfully requested.

In the July 3, 2002 Final Office Action, the Examiner rejected claims 1-31. The Examiner rejected claims 1-31 under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification. The Examiner rejected claims 1, 4, 6, 8, 12, 16, 20, 23, and 26 under 35 U.S.C. § 112, second paragraph, as failing to set forth the subject matter that applicant regards as the invention. The Examiner rejected claims 1, 2, 6, 10, 28, and 30 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,940,353 to Tani (the Tani reference), in view of U.S. Patent No. 5,940,854 to Green, Jr. et al. (the Green reference), and further in view of U.S. Patent No. 6,282,654 to Ikeda et al. (the Ikeda reference). This rejection is respectfully traversed. The Examiner indicated that claims 14-27, 29, and 31 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. § 112, first and second paragraphs. The Examiner objected to claims 3, 5, 7, 11, and 13 as being dependent upon rejected base claims, but indicated that claims 3, 5, 7, 11, and 13 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and corrected to overcome the rejections under 35 U.S.C. § 112, first and second paragraphs.

Claims 1-31 have all been amended to overcome the rejections under 35 U.S.C. § 112, first and second paragraphs. Specifically, the limitation of "preserving" has been amended to "reserving", as suggested by the Examiner.

The present invention relates to a system and method of logically erasing contents of a CD-RW disc in response to an erase command. The CD-RW disc is optically rewriteable, and has a program area and a Program Memory Area (PMA) area. The program area is recorded with the contents in the form of tracks. The PMA area is recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc, and the other kind of frames contains track information for determining the tracks of which the contents are recorded in the program area. In response to the erase command, the PMA area is accessed, and all frames that contain track information are deleted from the PMA area, thereby logically erasing all of the contents from the program area. The frames that contain the identification information in the PMA area are reserved so that the CD-RW disc can be identified during a rewrite, even after all of the contents are logically erased from the program area of the CD-RW disc.

Independent claim 1, as amended, recites:

accessing the PMA area in response to the *erase command*;
detecting and *deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area*; and

reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc.

The Tani reference is directed to a disc drive of a driving device for a CD-R disc or CD-RW disc. When a read-out error occurs due to a data mismatch in the PMA of

the CD-R disc, it saves the address information concerning a start and a stop of a readable track which is recorded in the PMA, accesses a corresponding track based on the saved address information, reads out data of the accessed track, and then, records the read-out data in a new CD-R disc. Thereby, larger amounts of data may be recovered even if an error occurs in reproducing during the reading of the PMA of a recordable disc or a rewritable disc.

The Tani reference does not disclose, teach, or suggest the method of independent claim 1, as amended. Unlike independent claim 1, as amended, the Tani reference does not make mention of accessing the PMA area in response to the *erase command*, detecting and *deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area, and reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc*. The Tani reference only teaches a data recovery technique for CD-R and CD-RW discs (col. 3, line 40 to col. 4, line 38; Figs. 3 and 4), from which the method of independent claim 1, as amended, relating to disc erasure, differs.

The Green reference does not make up for the deficiencies of the Tani reference. The Green reference is directed to a unique and permanent identifier that is provided for removable media. The identifier is preferably recorded in a previously unused or reserved portion of the media and can be generated from a combination of the originating drive serial number and the current date and time with a random number concatenated thereto. When a piece of media is loaded into a drive, the drive

examines the reserved area for the presence of an identifier. If not present, the drive generates and records an identifier before performing whatever disc access operations have been requested. If the identifier is present, the drive is prevented from overwriting the identifier with a new one and the disc access operations are performed immediately. Once the media is provided with its identifier, the media, and any errors associated with the media, can be tracked throughout its life.

The Green reference does not disclose, teach, or suggest the method of independent claim 1, as amended. Unlike independent claim 1, as amended, the Green reference does not disclose accessing the PMA area in response to the *erase command*, detecting and *deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area, and reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc*. The Green reference only teaches a method of compulsively writing a permanent ID to an optical disc for tracking the media and any errors associated to the media throughout its life. When a disc drive does not detect an ID in a loaded disc, the drive creates a unique ID and writes the created ID into the PMA area of the disc. When the drive detects an ID from a loaded disc, the drive inhibits rewriting and erasing of the detected ID to thereby permanently maintain the ID for the tracking purpose throughout its life. (Col. 3, line 44 to col. 4, line 13.)

The Ikeda reference does not make up for the deficiencies of the Tani reference and the Green reference. The Ikeda reference is directed to a recording/reproducing

system and a recording/reproducing process for adding additional information to information signals, such as image signals, and recording the resultant signals on a recording medium, and for, in reproduction, picking up the additional information added to the information signals and then performing control for reproduction. This technology is utilized to prohibit unauthorized copying of discs.

The Ikeda reference does not disclose, teach, or suggest the method of independent claim 1, as amended. Unlike independent claim 1, as amended, the Ikeda reference does not teach accessing the PMA area in response to the *erase command*, detecting and *deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area, and reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc*. The Ikeda reference only shows that a duplicate disc is produced by copying all of the content information together with the embedded disc ID. A disc player may detect a discrepancy between its own disc ID of the duplicate disc and the embedded disc ID of the original disc, and the disc player automatically erases the copied content information from the duplicate disc due to unauthorized copying. (Col. 12, lines 1-16.)

The disc ID recognition and copy protection scheme shown in the Ikeda reference does not relate to detecting and *deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area, and reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of*

the contents are logically erased from the program area of the CD-RW disc, as recited in independent claim 1, as amended. Accordingly, applicant respectfully submits that independent claim 1, as amended, distinguishes over the above-cited references.

Independent claims 6, 10, 28, and 30, all as amended, recite limitations similar to independent claim 1, as amended. Claims 2 and 4 both directly depend from independent claim 1, as amended. Claims 8 and 9 both directly depend from independent claim 6, as amended. Claim 12 directly depends from independent claim 10, as amended. Accordingly, applicant respectfully submits that claims 2, 4, 6, 8-10, 12, 28, and 30 distinguish over the above-cited references for the reasons set forth above with respect to independent claim 1, as amended.

Claims 14-27, 29, and 31 have been amended to overcome the rejections under 35 U.S.C. § 112, first and second paragraphs, set forth by the Examiner. Accordingly, applicant respectfully submits that claims 14-27, 29, and 31 are in condition for allowance. ✓

Claims 3, 5, 7, 11, and 13 have been amended in independent form, including all of the limitations of the base claims and any intervening claims. Claims 3, 5, 7, 11, and 13 have been amended to overcome the rejections under 35 U.S.C. § 112, first and second paragraphs, set forth by the Examiner. Accordingly, applicant respectfully submits that claims 3, 5, 7, 11, and 13 are also in condition for allowance.

The Title of the Invention has been amended to more accurately describe the embodiments of the present invention.

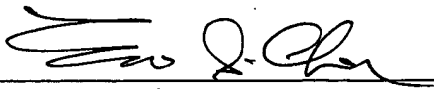
Applicant believes the foregoing amendments place the application in condition for allowance and a favorable action is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

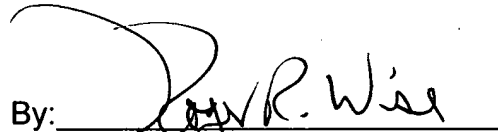
PILLSBURY WINTHROP LLP

Date: December 27, 2002

By: 

Eric S. Chen
Registration No. 43,542
Attorney for Applicant(s)

Date: December 27, 2002

By: 

Roger R. Wise
Registration No. 31,204
Attorney For Applicant(s)

725 South Figueroa Street, Suite 2800
Los Angeles, CA 90017-5406
Telephone: (213) 488-7100
Facsimile: (213) 629-1033

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE OF THE INVENTION:

Please amend the Title of the Invention as follows:

METHOD OF LOGICALLY ERASING CONTENTS OF A CD-RW DISC WHILE
[PRESERVING] RESERVING DISC ID

IN THE CLAIMS:

Please amend claims 1-31 as follows:

1. (Twice Amended) A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area; and

[preserving] reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof

VV →
new
amendment

even after all of the contents are logically erased from the program area of the CD-RW disc.

2. (Twice Amended) The method according to claim 1, wherein the step of [preserving] reserving comprises [preserving] reserving the frames containing the identification information at a predetermined leading section of the PMA area.

3. (Twice Amended) [The method according to claim 1] A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area; and

[reserving] the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc, wherein the PMA area is divided into sections by every ten number of frames,

and wherein the step of [preserving] reserving comprises reserving a ten number of frames which contain the identification information into a predetermined section of the PMA area so as to fill the predetermined section.

4. (Twice Amended) The method according to claim 1, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

5. (Twice Amended) [The method according to claim 1] A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area; and

reserving the frames containing the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all

of the contents are logically erased from the program area of the CD-RW disc,
wherein the step of [preserving] reserving comprises detecting when the
identification information is composed of a code incapable of identifying the CD-
RW disc, and then rewriting the identification information from the code
incapable of identifying the CD-RW disc to a code capable of identifying the CD-
RW disc.

6. (Twice Amended) A method of logically erasing contents of a CD-RW
disc in response to an erase command, the CD-RW disc being optically rewriteable and
having a program area and a PMA area, the program area being recorded with the
contents as tracks, the PMA area being recorded with at least two kinds of frames, one
kind of frames containing identification information for identifying the CD-RW disc and
another kind of frames containing track information for indicating the tracks of the
contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where the frames containing the identification information are
located at a leading section of the PMA area and the frames containing the track
information are located in a subsequent section of the PMA area after the
leading section; then

deleting all of the frames which contain the track information from the
PMA area, thereby logically erasing all of the contents from the program area;
and

[preserving] reserving the frames which contain the identification information as they are at the leading section of the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc.

7. (Twice Amended) [The method according to claim 6] A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where the frames containing the identification information are located at a leading section of the PMA area and the frames containing the track information are located in a subsequent section of the PMA area after the leading section; then

deleting all of the frames which contain the track information from the PMA area, thereby logically erasing all of the contents from the program area;
and

reserving the frames which contain the identification information as they are at the leading section of the PMA area, so that the CD-RW disc can be

identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc, wherein the PMA area is divided into sections by every ten number of frames, and wherein the step of [preserving] reserving comprises reserving a ten number of frames which contain the identification information in the leading section of the PMA area.

8. (Twice Amended) The method according to claim 6, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

9. (Twice Amended) The method according to claim 6, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

10. (Twice Amended) A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and

another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where first frames containing the identification information are located at a part of a leading section of the PMA area and where second frames containing the track information are located after the first frames in the PMA area; then

deleting all of the second frames so as to logically erase all of the contents from the program area; and

[preserving] reserving the first frames in the leading section of the PMA area while filling the leading section by the first frames to complete the leading section, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc.

11. (Twice Amended) [The method according to claim 10] A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where first frames containing the identification information are located at a part of a leading section of the PMA area and where second frames containing the track information are located after the first frames in the PMA area; then

deleting all of the second frames so as to logically erase all of the contents from the program area; and

reserving the first frames in the leading section of the PMA area while filling the leading section by the first frames to complete the leading section, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc, wherein the PMA area is divided into sections by every ten number of frames, and wherein the step of [preserving] reserving comprises reserving a ten number of frames which contain the identification information into the leading section of the PMA area so as to fill the leading section.

12. (Twice Amended) The method according to claim 10, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

13. (Twice Amended) [The method according to claim 10] A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the

program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where first frames containing the identification information are located at a part of a leading section of the PMA area and where second frames containing the track information are located after the first frames in the PMA area; then

deleting all of the second frames so as to logically erase all of the contents from the program area; and

reserving the first frames in the leading section of the PMA area while filling the leading section by the first frames to complete the leading section, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

14. (Twice Amended) A method of logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and

having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being divided into a leading section and subsequent sections and being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA area in response to the erase command;

detecting where first frames containing the identification information are located at a subsequent section of the PMA area and where second frames containing the track information are located in either of the leading section and the subsequent sections except for that containing the first frames; then

deleting all of the second frames so as to logically erase all of the contents from the program area; and

[preserving] reserving the first frames in the leading section of the PMA area by copying the first frames from the subsequent sections while deleting the first frames from the subsequent sections, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc.

15. (Twice Amended) The method according to claim 14, wherein the PMA area is divided into sections by every ten number of frames, and wherein the step of [preserving] reserving comprises reserving a ten number of frames which contain the

identification information into the leading section of the PMA area so as to fill the leading section.

16. (Twice Amended) The method according to claim 14, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

17. (Twice Amended) The method according to claim 14, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

18. (Twice Amended) A method of logically erasing contents of a CD-RW disc having a program area and a PMA area in response to an erase command, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the CD-RW disc, the method comprising:

accessing the PMA area in response to the erase command effective to command an erase of a last track from the program area;

detecting where frames containing the identification information are located at a succeeding section of the PMA area after a preceding section of the PMA area containing frames corresponding to the last track; then

deleting the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

[preserving] reserving the frames containing the identification information in the preceding section of the PMA area by copying the frames containing the identification information from the succeeding section while deleting the frames containing the identification information from the succeeding section.

19. (Twice Amended) The method according to claim 18, wherein the PMA area is divided into sections by every ten number of frames, and wherein the step of [preserving] reserving comprises reserving a ten number of frames which contain the identification information into the preceding section of the PMA area so as to fill the preceding section.

20. (Twice Amended) The method according to claim 18, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

21. (Twice Amended) The method according to claim 18, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

22. (Twice Amended) A method of logically erasing contents of a CD-RW disc having a program area and a PMA area in response to an erase command, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the CD-RW disc, the PMA area being divided into sections by every ten number of frames, the method comprising:

accessing the PMA area in response to the erase command effective to command an erase of a last track from the program area;

detecting where a five number of frames containing the identification information are located at a section of the PMA area and where another five number of frames corresponding to the last track are located in the section of the PMA area; then

deleting the five number of the frames corresponding to the last track from the section so as to logically erase the contents of the last track from the program area; and

[preserving] reserving a ten number of the frames containing the identification information in the section by duplicating the five number of the frames containing the identification information.

23. (Twice Amended) The method according to claim 22, further comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

24. (Twice Amended) The method according to claim 22, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

25. (Twice Amended) A method of logically erasing contents of a CD-RW disc having a program area and a PMA area in response to an erase command, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the CD-RW disc, the PMA area being divided into sections by every ten number of frames, the method comprising:

accessing the PMA area in response to the erase command effective to command an erase of a last track from the program area;

detecting where a five number of frames corresponding to the last track are located in a preceding section and another five number of frames corresponding to a track next to the last track are located in the preceding section, and a ten number of frames containing the identification information are located at a succeeding section of the PMA area after the preceding section; then

deleting the five number of the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area;

[preserving] reserving a ten number of the frames corresponding to a track next to the last track in the preceding section by duplicating the five number of the frames corresponding to the track next to the last track; and

[preserving] reserving the ten number of the frames containing the identification information in the succeeding section as they are.

26. (Twice Amended) The method according to claim 25, comprising the step of deleting the frames containing the identification information instead of the step of [preserving] reserving the frames containing the identification information when the identification information is incapable of identifying the CD-RW disc.

27. (Twice Amended) The method according to claim 25, wherein the step of [preserving] reserving comprises detecting when the identification information is composed of a code incapable of identifying the CD-RW disc, and then rewriting the identification information from the code incapable of identifying the CD-RW disc to a code capable of identifying the CD-RW disc.

28. (Twice Amended) An apparatus for treating contents of a CD-RW disc, comprising:

a mount that mounts a CD-RW disc which is optically rewriteable and which has a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area;

an input that inputs an erase command effective to logically erase all of the contents from the program area of the CD-RW disc;

a pickup that accesses the PMA area of the mounted CD-RW disc in response to the erase command; and

a controller that controls the pickup to detect and delete all of the frames which contain the track information from the PMA area, thereby logically erasing all of the contents from the program area, and that controls the pickup to [preserve] reserve the frames which contain the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even

after all of the contents are logically erased from the program area of the CD-RW disc.

29. (Twice Amended) An apparatus for logically erasing contents of a CD-RW disc, comprising:

- a mount that mounts the CD-RW disc having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the CD-RW disc;

- a input that inputs an erase command effective to command an erase of a last track from the program area;

- a pickup that accesses the PMA area in response to the erase command;
- and

- a controller that controls the pickup to perform a process including:

- detecting where the frames containing the identification information are located at a succeeding section of the PMA area after a preceding section of the PMA area containing the frames corresponding to the last track; then

- deleting the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

[preserving] reserving the frames containing the identification information in the preceding section of the PMA area by copying the frames containing the identification information from the succeeding section while deleting the frames containing the identification information from the succeeding section.

30. (Twice Amended) A machine readable medium for use in an apparatus having a processor for logically erasing contents of a CD-RW disc in response to an erase command, the CD-RW disc being optically rewriteable and having a program area and a PMA area, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the CD-RW disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, program code stored on the machine readable medium includes instructions to:

access the PMA area in response to the erase command;

detect and delete all of the frames containing the track information from the PMA area, thereby logically erasing all of the contents from the program area; and

[preserve] reserve the frames which contain the identification information in the PMA area, so that the CD-RW disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the CD-RW disc.

31. (Twice Amended) A machine readable medium for use in an apparatus having a processor for logically erasing contents of a CD-RW disc having a program area and a PMA area in response to an erase command, the program area being recorded with the contents as tracks, the PMA area being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the CD-RW disc, program code stored on the machine readable medium includes instructions to:

- access the PMA area in response to the erase command effective to command an erase of a last track from the program area;

- detect where the frames containing the identification information are located at a succeeding section of the PMA area after a preceding section of the PMA area containing frames corresponding to the last track; then

- delete the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

- [preserve] reserve the frames containing the identification information in the preceding section of the PMA area by copying the frames containing the identification information from the succeeding section while deleting the frames containing the identification information from the succeeding section.